THIN SOLID FILMS VOLUME 244, NUMBERS 1–2, MAY 15, 1994

Contents

Polymers in Organized Molecular Films

Spreading and transfer behavior of poly(2-acrylamidohexadecylsulfonic acid-co-styrene) monolayers 691
T. R. Fang, Z. Fang, S. X. Xu, L. W. Qiu and A. D. Lu (Changchun, China)

Comparison of Langmuir–Blodgett films of polyamic acid *tert*-amine salts with single, double and triple chains 696
K. Hirano, Y. Nishi, H. Fukuda (Nagoya, Japan), M. Kakimoto, Y. Imai (Tokyo, Japan), T. Araki (Yokohama, Japan) and K. Iriyama (Tokyo, Japan)

Molecular configuration of isotactic PMMA Langmuir–Blodgett films observed by scanning tunnelling microscopy ... 700
J.-J. Kim, S.-D. Jung, H.-S. Roh and J.-S. Ha (Daejeon, South Korea)

Monolayers and Langmuir–Blodgett multilayer films of a conjugated azo polymer 705
P. Kimkes, A. de Jong, G. T. Oostergetel, A. J. Schouten and G. Challa (Groningen, Netherlands)

An imide cross-linking and concurrent skeletonization of Langmuir–Blodgett films composed of two oppositely charged polymers 710
H. Jeong, B.-J. Lee (Kimhae, South Korea) and Y.-S. Kwon (Pusan, South Korea)

Synthesis and characterization of poly(*o*-phenetidine) for the fabrication of Langmuir and Langmuir–Blodgett films .. 714
L. H. C. Mattoso, S. V. Mello, A. Riul, Jr., O. N. Oliveira, Jr. and R. M. Faria (São Carlos, Brazil)

Photochemical studies of Langmuir–Blodgett films fabricated from *N*-alkylacrylamide copolymers with various vinyl aromatic monomers 718
T. Miyashita, J. Sakai, Y. Mizuta and M. Matsuda (Sendai, Japan)

Effect of polymer molecular weight on Langmuir monolayers and the deposition of Langmuir–Blodgett films of poly(3-butylthiophene) and stearic acid 723
A. Pawlicka, R. M. Faria, M. Yonashiro, S. V. Canevarolo, Jr. and O. N. Oliveira, Jr. (São Carlos, Brazil)

Langmuir–Blodgett processing of conjugated polymers 728
L. Robitaille, J.-Y. Bergeron, G. D'Aprano, M. Leclerc (Montréal, Qué., Canada) and C. L. Callender (Ottawa, Ont., Canada)

Mono- and multilayers of new comb-like polymers containing terminal vinyl groups in the side chains 732
Y. Shibasaki, G. Wen, H. Nakahara and K. Fukuda (Urawa, Japan)

Monovalent anions stabilize the structure of bacteriorhodopsin at the air–water interface 736
A. Shibata, J. Kohara, S. Ueno (Tokushima, Japan), I. Uchida, T. Mashimo (Osaka, Japan) and T. Yamashita (Tokushima, Japan)

Amylose triacetate Langmuir–Blodgett films: Y, Z and alternated with other polymers 740
M. Bardosova, F. Davis, R. H. Tredgold, Z. Ali-Adib (Manchester, UK), B. Hunt (Lancaster, UK) and V. Shmatko (Bratislava, Slovak Republic)

Morphology and molecular ordering in Langmuir–Blodgett films from ladder polyheteroarylenes 745
V. V. Tsukruk, V. N. Bliznyuk and D. H. Reneker (Akron, OH, USA)

Further investigation of the preparation process of poly(*p*-phenylenevinylene) Langmuir–Blodgett films 750
A. Wu, S. Yokoyama, S. Watanabe, M. Kakimoto, Y. Imai (Tokyo, Japan), T. Araki (Yokohama, Japan) and K. Iriyama (Tokyo, Japan)

Various orientations of pendant dye attached to polyamic acid Langmuir and Langmuir–Blodgett films studied by an optical second-harmonic generation interferometry technique 754
T. Tamada, S. Yokoyama, K. Kajikawa, K. Ishikawa, H. Takezoe, A. Fukuda, M. Kakimoto and Y. Imai (Tokyo, Japan)

Self-Organized Molecular Films

Plate-to-nematoid transition of self-organized layers in liquid crystal systems 758
A. Adamczyk (Warsaw, Poland)

Elsevier Sequoia

Surface morphology of cyanine dye single-crystal sheets grown on a lipid monolayer 763
V. V. Tsukruk, D. H. Reneker (Akron, OH, USA), V. N. Bliznyuk, S. Kirstein and H. Möhwald (Mainz, Germany)

Molecular self-assembly at a pre-formed Langmuir–Blodgett template 768
H. Byrd, S. Whipps, J. K. Pike and D. R. Talham (Gainesville, FL, USA)

Proof of multilayer structural organization in self-assembled polycation–polyanion molecular films 772
G. Decher, Y. Lvov and J. Schmitt (Mainz, Germany)

Raman spectroscopy of self-assembled mono- and multilayer films of alkanethiolate on gold 778
S. D. Evans, T. L. Freeman, T. M. Flynn, D. N. Batchelder (Leeds, UK) and A. Ulman (Rochester, NY, USA)

Multilayers of ω-mercaptoalkanoic acids containing a polar aromatic group: characterization of films 784
T. L. Freeman, S. D. Evans (Leeds, UK) and A. Ulman (Rochester, NY, USA)

Self-assembly of avidin and streptavidin with multifunctional biotin molecules 789
H. Fukushima, H. Morgan and D. M. Taylor (Bangor, UK)

Molecular organization of amphiphilic disc-shaped penta-alkynes in LB-mono- and multilayers 794
D. Janietz, D. Hofmann and J. Reiche (Teltow, Germany)

Surface chemistry of thiols on copper: an efficient way of producing multilayers 799
H. Keller, P. Simak, W. Schrepp and J. Dembowski (Ludwigshafen, Germany)

Molecular self-assembly of conjugated polyions: a new process for fabricating multilayer thin film heterostructures 806
M. Ferreira, J. H. Cheung and M. F. Rubner (Cambridge, MA, USA)

Control of molecular chain tilt in self-assembled monolayers and its effect on wetting properties 810
Y.-T. Tao and M.-T. Lee (Taipei, Taiwan, ROC)

Build-up of polymeric molecular deposition films bearing mesogenic groups 815
M. Gao, X. Kong, X. Zhang and J. Shen (Changchun, China)

Theoretical Modeling

Surface pressure in solid-on-solid models 819
J. De Coninck, S. Limbourg and C. M. Newman (Mons, Belgium)

A cross-section potential for calculation of close packing geometries of monolayer films 824
D. R. Swanson, R. J. Hardy and C. J. Eckhardt (Lincoln, NE, USA)

Intersecting adsorbing polymers in lipid bilayers: thermodynamics of cliques and static order parameters 827
D. A. Pink, B. Quinn (Antigonish, N. S., Canada), R. Merkel (Garching, Germany), R. A. Leger (Antigonish, N. S., Canada) and E. Sackmann (Garching, Germany)

Molecular Recognition in Organized Molecular Films

Recognition properties of amphiphilic cyclodextrin monolayers at the air–water interface 832
M. Tanaka, R. Azumi, H. Tachibana, T. Nakamura, Y. Kawabata, M. Matsumoto (Ibaraki, Japan), T. Miyasaka, W. Tagaki (Osaka, Japan), H. Nakahara and K. Fukuda (Urawa, Japan)

Biological and Biomimetic Aspects of Organized Molecular Films—Biomembranes

Electrochemical investigations of the structure and electron transfer properties of phospholipid bilayers incorporating ubiquinone 836
J.-M. Laval (Compiegne, France) and M. Majda (Berkeley, CA, USA)

Interaction between dipalmitoylphosphatidylglycerol and phosphatidylcholine and calcium 841
K. Nag, N. H. Rich and K. M. W. Keough (St. John's, Nfld., Canada)

Kinetics of spreading at the air–water interface of dioleoylphosphatidylcholine liposomes influenced by photodynamic lipid peroxidation 845
I. Panaiotov (Sofia, Bulgaria), J. E. Proust (Angers, France), V. Raneva and Tz. Ivanova (Sofia, Bulgaria)

Surface-enhanced Raman scattering studies of lipid planar bilayers in water 852
M. S.-P. Chazalet, M. Masson, C. Bousquet, G. Bolbach, Y. Ridente and J. Bolard (Paris, France)

Biological and Biomimetic Aspects of Organized Molecular Films—Interactions of Biological Components with Interfaces

Immunoglobulin immobilization by the Langmuir–Blodgett method 857
L. Pillet, H. Perez, A. Ruaudel-Teixier and A. Barraud (Gif-sur-Yvette, France)

Galactosylceramides with homogeneous acyl chains: the effect of acyl structure on intermolecular interactions occurring at the argon/buffered saline interface 860
S. Ali, J. M. Smaby and R. E. Brown (Austin, MN, USA)

Molecular construction of a photosynthetic reaction center at the interface by its affinity with quinonylphospolipid ... 865
Y. Hirata and J. Miyake (Ibaraki, Japan)

Interactions of phospholipid bilayer vesicles with monomolecular films at the air–water interface 869
V. S. Kulkarni and R. E. Brown (Austin, MN, USA)

Cholesterol–phospholipid interaction: a monolayer study 874
H. Mozaffary (Stockholm, Sweden)

Local anesthetic–phospholipid interactions 878
H. Mozaffary (Stockholm, Sweden)

Large-scale reconstitution of crystalline bacterial surface layer proteins at the air–water interface and on lipid films... 882
D. Pum and U. B. Sleytr (Vienna, Austria)

Fluorescence microscopic imaging of hydrolysis of phospholipid monolayers by phospholipase D at the air–water interface 887
T. Kondo, T. Kakiuchi (Kyoto, Japan) and M. Shimomura (Sapporo, Japan)

Monolayers of Na^+, K^+-adenosine triphosphatase at the gas–liquid interface 890
S. Yu. Zaitsev (Moscow, Russian Federation) and D. Möbius (Göttingen, Germany)

Applications of Organized Molecular Films—Bio- and Chemical Sensors

Phosphine sensing mechanism in conducting Langmuir–Blodgett films based on tetracyanoquinodimethane and ethylenedithiotetrathiofulvalene derivatives 895
S. Clémendot, H. Perez, G. Derost, A. Ruaudel-Teixier, A. Barraud (Gif-sur-Yvette, France), G. Bolbach, J. C. Blais, H. Roulet, G. Dufour (Paris, France) and G. Dagoury (Gif-sur-Yvette, France)

Transduction of the reaction between urea and covalently immobilized urease by fluorescent amphiphilic membranes.. 898
J. D. Brennan, K. M. R. Kallury and U. J. Krull (Mississauga, Ont., Canada)

Langmuir–Blodgett films of alkylpyridines as metal ion sensors 905
G. Caminati, E. Margheri and G. Gabrielli (Florence, Italy)

A gas–humidity sensor fabricated with phthalocyanine Langmuir–Blodgett film 909
C. Gu, L. Sun, T. Zhang, T. Li (Changchun, China) and M. Hirata (Chiba, Japan)

The use of self-assembled receptor layers in immunosensors 913
R. P. H. Kooyman, D. J. van den Heuvel (Enschede, Netherlands), J. W. Drijfhout (Leiden, Netherlands) and G. W. Welling (Groningen, Netherlands)

Bilayer lipid membranes as electrochemical switches in reactions involving alteration of surface charge 917
U. J. Krull, S. L. Seethaler, J. D. Brennan (Mississauga, Ont., Canada) and D. P. Nikolelis (Athens, Greece)

Applications of Organized Molecular Films—Molecular Electronics

Determination of the parallel and perpendicular intermolecular tunnelling rates in two Langmuir–Blodgett quantum well systems 923
K. J. Donovan, K. Scott, R. V. Sudiwala, E. G. Wilson, R. Bonnett, R. F. Wilkins (London, UK), R. Paradiso (Genoa, Italy), T. R. Clark, D. A. Batzel and M. E. Kenney (Cleveland, OH, USA)

Comparison of tunnelling rates in two Langmuir–Blodgett quantum well structures differing only in barrier width.... 928
K. J. Donovan, J. Elliott, K. Scott, R. V. Sudiwala, E. G. Wilson (London, UK), T. R. Clark, D. A. Batzel and M. E. Kenney (Cleveland, OH, USA)

A field effect transistor based on Langmuir–Blodgett films of an $Ni(dmit)_2$ charge transfer complex 932
C. Pearson, A. J. Moore, J. E. Gibson, M. R. Bryce and M. C. Petty (Durham, UK)

Conductivity and electroluminescence in an organometallic Langmuir–Blodgett film/anthracene structure 936
G. Williams, A. J. Moore, M. R. Bryce and M. C. Petty (Durham, UK)

Applications of Organized Molecular Films—Non-Linear Optics

Z-type deposition of a polymerizable amphiphile to fabricate an immobilized LB film showing strong second harmonic generation 939
K. Isomura, K. Takehara (Kitakyushu, Japan), K. Kobayashi, G. Funakoshi, H. Taniguchi (Fukuoka, Japan), M. Era, T. Tsutsui and S. Saito (Kasuga, Japan)

Langmuir–Blodgett films of an asymmetrically substituted metal-free phthalocyanine and the second-order non-linear optical properties 943
Y. Liu, Y. Xu, D. Zhu (Beijing, China), T. Wada, H. Sasabe (Saitama, Japan), L. Liu and W. Wang (Shanghai, China)

Ultrafast optical modulation of quadratic non-linearity from an Ru(II)–bipyridine complex in Langmuir–Blodgett assemblies 947
H. Sakaguchi, T. Nagamura (Hamamatsu, Japan), T. L. Penner and D. G. Whitten (Rochester, NY, USA)

Applications of Organized Molecular Films—Selective Membranes

Impedance spectroscopy of biomembrane Langmuir–Blodgett films 951
V. A. Howarth and M. C. Petty (Durham, UK)

Study on the stability of a copper phthalocyanine Langmuir–Blodgett film gas-sensitive element 955
A. Lu, L. Zhang, D. Jiang, Y. Li and Y. Fan (Changchun, China)

Permeation of gases through Langmuir–Blodgett films of iron(III) stearate and iron(III) complexes 958
P. J. Bruinsma and P. Stroeve (Davis, CA, USA)

Additional Papers

The photoinduced surface pressure relaxation processes in amphiphilic spiropyrane and spiroindolinonaphthooxazine .. 962
A. A. Kharlamov, A. V. Lyubimov and A. M. Vinogradov (Moscow, Russian Federation)

Alternating Langmuir–Blodgett multilayers with low optical losses for Cerenkov-type frequency doubling 966
W. Hickel, B. Menges, O. Althoff, D. Lupo, U. Falk and U. Scheunemann (Frankfurt-am-Main, Germany)

Determination of molecular orientations in Langmuir–Blodgett films by polarized Fourier transform IR attenuated total reflection and transmission spectroscopy 971
D. J. Ahn and E. I. Franses (West Lafayette, IN, USA)

Study on the dielectric loss tan δ of metal–insulator–metal and metal–insulator–metal–insulator–metal junctions with polyimide Langmuir–Blodgett films 977
M. Kushida (Chiba, Japan), M. Iwamoto (Tokyo, Japan), N. Ueno, K. Sugita (Chiba, Japan) and T. Hino (Yokohama, Japan)

Time-resolved third-order non-linear optical susceptibility of Langmuir–Blodgett films of mixed dimers $ZnP(N^{+}C_{22})_4/H_2P_cTS^{4-}$ by femtosecond laser spectroscopy 981
K. D. Truong, A. D. Bandrauk (Sherbrooke, Qué., Canada), T. H. Tran-Thi (Gif-sur-Yvette, France), P. Grenier, D. Houde (Sherbrooke, Qué., Canada) and S. Palacin (Gif-sur-Yvette, France)

Molecular self-assembly of conducting polymers 985
J. H. Cheung, A. F. Fou and M. F. Rubner (Cambridge, MA, USA)

Fabrication of electrically conductive Langmuir–Blodgett multilayer films of polyaniline 990
J. H. Cheung and M. F. Rubner (Cambridge, MA, USA)

A fluorescence study of the miscibility of ω-arylalkanoic acids in Langmuir–Blodgett films 995
B. Verschuere, M. Van der Auweraer and F. C. De Schryver (Leuven, Belgium)

In situ imaging of Langmuir monolayers by second-harmonic microscopy 1001
M. Flörsheimer, H. Looser, M. Küpfer and P. Günter (Zürich, Switzerland)

Efficient second-harmonic generation from all-polymeric Langmuir–Blodgett "AB" films containing up to 600 layers 1007
P. Hodge, Z. Ali-Adib, D. West and T. A. King (Manchester, UK)

Polysiloxanes for Langmuir–Blodgett applications 1012
P. J. W. Stone, A. L. Rhoden, L. S. Miller, D. J. Walton, A. M. McRoberts and J. Heptinstall (Coventry, UK)

Detection of photoregulation in a monolayer system mixed with liquid crystal and azobenzene polymer using a displacement-current measuring technique 1018
H. Naruse, H. Yoshida, K. Ohnishi, M. Iwamoto (Tokyo, Japan) and K. Ichimura (Yokohama, Japan)

Effect of elongation of the π-electron system on the behavior of amphiphiles containing the pyrazine ring 1022
K. Isomura, K. Takehara (Kitakyushu, Japan), K. Takehara and H. Taniguchi (Fukuoka, Japan)

Phase diagram and morphology of anisotropic domains in a pure and mixed carbocyanine monolayer 1026
C. Flament and F. Gallet (Paris, France)

Maxwell displacement current across single monolayers 1031
M. Iwamoto (Tokyo, Japan)

Interaction between adjacent two-dimensional lattices of diacetylenic lipid and a cyanine dye 1037
V. Bliznyuk (Kiev, Ukraine), S. Kirstein and H. Möhwald (Mainz, Germany)

Spontaneous reduction of octadecyltetracyanoquinodimethane at the air–water interface in the presence of amphiphilic cations 1043
J. Perez, J. P. Bourgoin, C. Barisone, M. Vandevyver and A. Barraud (Gif-sur-Yvette, France)

Langmuir–Blodgett monolayers and multilayers of stearic acid and stearyl amine 1050
M. Puggelli, G. Gabrielli and G. Caminati (Florence, Italy)

Molecular arrangements and polycondensation of long-chain esters of amino acids containing an aromatic ring in Langmuir–Blodgett films 1055
H. Nakahara, K. Hayashi, Y. Shibasaki, K. Fukuda (Urawa, Japan), T. Ikeda and M. Sisido (Yokohama, Japan)

Investigation of the in-plane structure of Pb and Ni stearate multilayers by means of grazing incidence X-ray diffraction 1061
T. A. Barberka (Potsdam, Germany), U. Höhne (Mainz, Germany), U. Pietsch (Potsdam, Germany) and T. H. Metzger (Munich, Germany)

Electro-optic properties of some oligomeric Langmuir–Blodgett films 1067
J. P. Cresswell, M. C. Petty (Durham, UK), J. E. Shearman, S. Allen, T. G. Ryan (Middlesbrough, UK) and I. Ferguson (Manchester, UK)

Fluorescence spectroscopy for a polymer monolayer at the air–water interface 1073
S. Ito, S. Oki, T. Hayashi and M. Yamamoto (Kyoto, Japan)

Submolecular details of Cd arachidate Langmuir–Blodgett films detected by atomic force microscopy 1078
M. Flörsheimer, A. J. Steinfort and P. Günter (Zürich, Switzerland)

Author Index 1083

Subject Index 1087

Parts 1 and 2 appear as Vols. 242/1–2 and 243/1–2

The publisher encourages the submission of articles in electronic form thus saving time and avoiding rekeying errors. A leaflet describing our requirements is available from the publisher upon request.